

Attorney Docket No.: 056228.53302US  
PATENT

WHAT IS CLAIMED IS:

1. A radar method of classifying or identifying helicopters, comprising the steps:

generating a one-dimensional distance profile of a helicopter to be classified or to be identified by means of radar (Ra), a radar echo of the helicopter fuselage, at least one of a radar echo of the rotor head of the main rotor and a radar echo of the main rotor axis, and a radar echo of the rear rotor axis.

determining aspect angles in azimuth and elevation directions relative to an axis of an antenna of the radar,

determining at least two helicopter parameters from the measured radar echoes as well as from the determined aspect angles, said at least one helicopter parameters including total length of the helicopter, a distance between the rotor axes of the main and rear rotor, and a distance between the nose of the helicopter and the rotor axis of the main rotor,

comparing the determined helicopter parameters with stored helicopter parameters for different helicopter types.

2. The method according to claim 1, wherein generating of the one-dimensional distance profile takes place by means of a stepped frequency method

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directly in a frequency range.

3. The method according to claim 2, wherein measuring of the radar echoes takes place by using super resolution methods, including maximum likelihood estimation, maximum entropy estimation or MUSIC estimation.

4. A method of classifying helicopters, comprising the steps:  
generating a one-dimensional distance profile of a helicopter by measuring a plurality of radar echoes of a corresponding plurality of rotor physical characteristics and by measuring a radar echo of a main structural portion of the helicopter

determining aspect angles in azimuth and elevation direction relative to an axis of a radar antenna.

determining a plurality of helicopter parameters from said generated one-dimensional profile and said determined aspect angles.

5. The method according to claim 4 wherein said at least two parameters include total length of the helicopter, distance between a rotor axes of a main and rear rotor, and a distance between a nose and the rotor axis of the main rotor of the helicopter.

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6. The method according to claim 4, further including the step of comparing the determined helicopter parameters with stored helicopter parameters for different helicopters.

7. The method according to claim 4, wherein generating of the one-dimensional distance profile takes place by means of a stepped frequency method directly in a frequency range.

8. The method according to claim 4, wherein measuring of the radar echoes takes place by using super resolution methods, including maximum likelihood estimation, maximum entropy estimation or MUSIC estimation.